THE ASCENT OF EQUUS

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The STORY of the ORIGIN and DEVELOPMENT of the HORSE

●

By CHESTER STOCK
and HILDEGARDE HOWARD

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PREFACE

A special exhibit entitled "The Ascent of Equus" was installed in 1941 as one of a series of Science displays at the Los Angeles County Museum. The portions of the exhibit dealing with the ancestry of the horse through geologic time, and the development of domestic breeds have been retained as a Museum feature. Plans for future development include an expansion and revision of this exhibit.

This pamphlet contains information covered in the original exhibit, including morphological aspects of the adaptation of the horse to its environment, a brief account of the development of the horse as shown by the fossil record, and a history of man's use of the horse culminating in the various domestic breeds. The illustrations are, for the most part taken from the 1941 exhibit. This second edition is essentially the same as the one issued in 1944, except for minor revisions required by new discoveries.

Questions of the horse's early domestication, the center or centers of its dispersal, and further development are still open to discussion. The evidence is far from conclusive on these questions. The most plausible views in the light of recent paleontological and archeological evidence have been accepted. The subject of modern breeds is so vast that only a cursory review is given.

The Museum is indebted to David P. Willoughby for providing suggestions for revision of the section dealing with the modern horse.

J. R. Macdonald, Curator of Vertebrate Paleontology
Editor, 2nd Edition

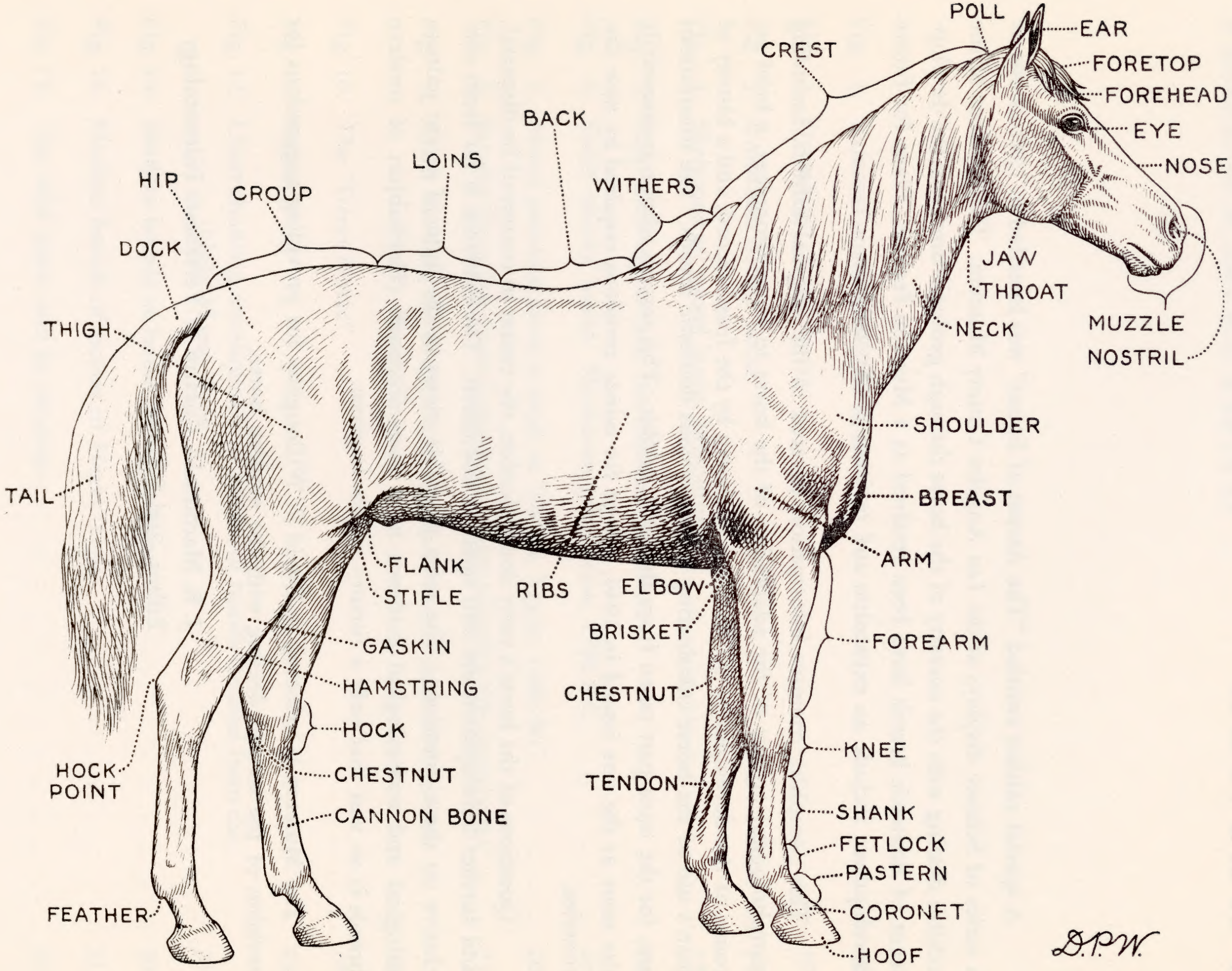

Fig. 1. External Anatomy of the Horse

Drawing by David P. Willoughby

INTRODUCING EQUUS

The name *Equus*, in its broad sense, applies not only to the typical horse but to a number of animals which are its near relatives: the zebra, quagga, bontequagga and asses of Africa and the onager, kiang and kulan of Asia. The true horse is known in the wild today only in Mongolia. But in the domesticated state it is found in all parts of the world and is represented by some sixty different breeds. Although easily distinguished from each other in color and certain proportions, the horse and its relatives are anatomically very similar. Basically they represent nature's most successful adaptation to a plains dwelling life, where food consists of harsh grasses and escape from enemies depends upon speed across open land devoid of hiding places.

The structure of *Equus* is perfectly organized for speed. The long lower leg bones provide a long stride, while the short, sturdy upper bones afford firm attachment for powerful muscles of propulsion. Smoothness of action is attained between many of the limb elements by keeled joints which permit ease of flexure in a fore and aft direction without wasteful lateral movement. The possibility of dislocation is reduced to a minimum by this type of joint, as well as by the reduction in number of bones in the limb.

Extreme specialization of the horse's leg is emphasized by comparison with the leg of a lion and that of man. In man the leg and foot are distinctly more generalized in character. The foot with its five toes and the five bones (metapodials) of the arch is so placed that the heel and toes touch the ground — a condition referred to as *plantigrade*. The upper and lower segments of the leg are of about equal length and the lower segment is composed of two bones — the tibia and fibula.

The lion occupies an intermediate position compared with man and the horse. It is a better runner than man, but cannot compete with the horse. The lion is *digitigrade*, that is the heel is situated above the ground and the weight of the body is carried on the digits, or toes. This raising of the heel, which is combined with a slight lengthening of the foot bones (here only four in number), gives added distance from knee to ground. Also, the thigh bone (femur) is shortened slightly in proportion to the shin bone.

In the horse the upper leg bone, though extremely sturdy, is actually no longer than this element in man. The outer bone of the lower leg is reduced to a mere vestige, and the distance from knee to ground is greatly lengthened by what appears to be an additional long bone below the tibia. This long "cannon bone" is anatomically the middle bone or metapodial of the foot elevated high above the ground so that the animal walks on the tip of its toe (*unguligrade*). The toe is single, the only trace of lateral foot or toe bones being the tapering "splints," one on either side of the

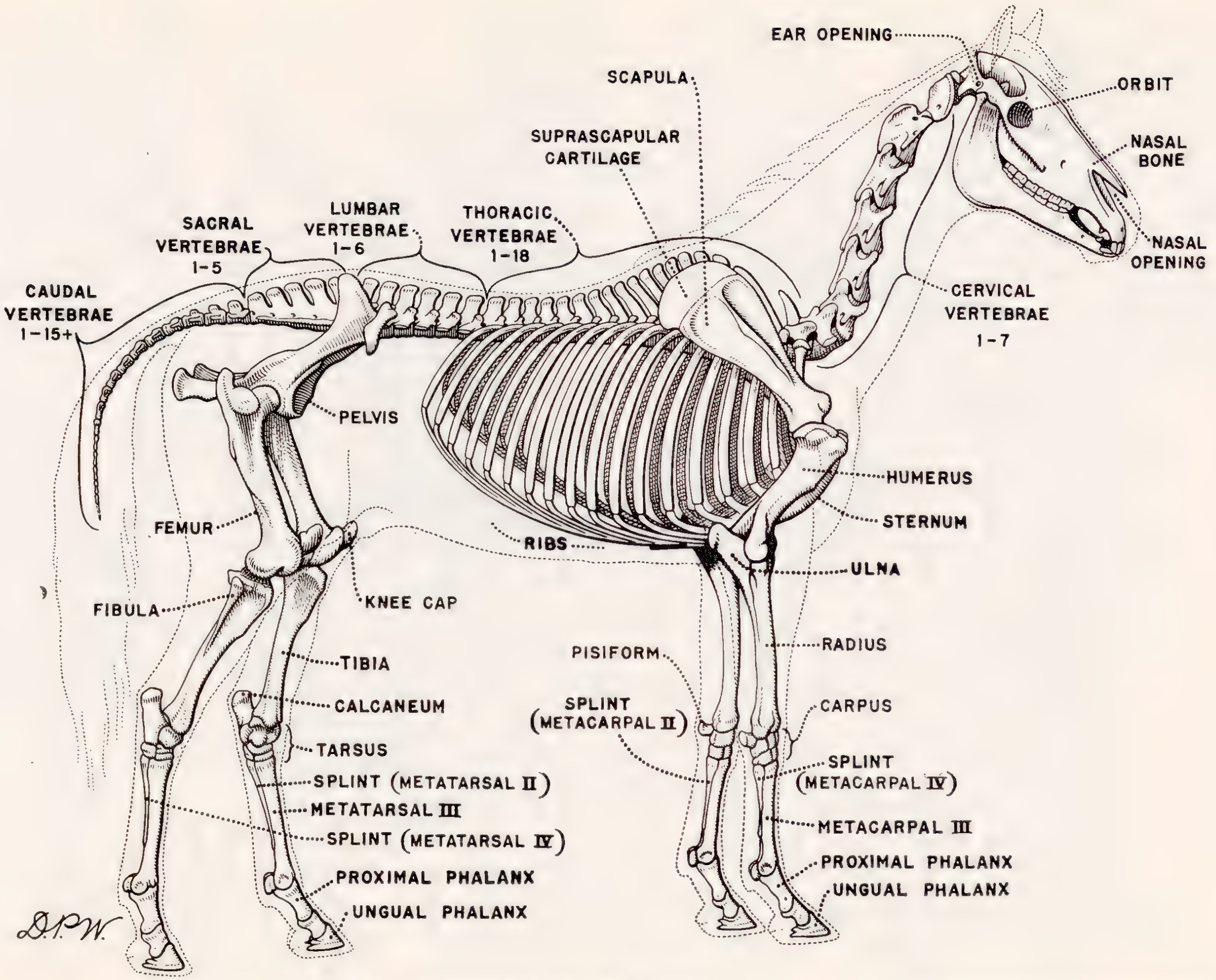

Fig. 2. Osteology of the Horse

Drawing by David P. Willoughby

cannon bone at its upper end. Though apparently very slender, the legs of the horse are extremely strong, and in a hard run, one leg at a time can, and does, support the full weight of the animal.

With the long legs of the horse there is a compensating length of neck and skull so that the animal may reach its food. A remarkable specialization likewise occurs in the dentition, permitting the animal to chew the harsh grasses on which it feeds and to withstand the abrasive action of the sand grains taken into the mouth while grazing. The teeth of the horse are in astonishing contrast to the short-crowned, simple teeth of man or to the shearing teeth of the flesh-eating lion. In *Equus* all of the cheek teeth are block-like columns composed of hard enamel ridges enclosing dentine and folded in intricate pattern. Coating the enamel, or sometimes folded into the tooth crown itself, is a third substance, the cement. The enamel ridges form the strong, wear resistant parts of the tooth, and an extended period of usefulness is further insured by the long crowns, two or three inches in length. The crowns extend well into the jaws beyond the gum line and gradually move into place as the grinding surface is worn away. The front teeth, used entirely for cropping, are not quite so long and have a single fold of enamel.

It is evident both in teeth and feet that the horse is far removed from the generalized mammalian type. Apparent also is the fact that these differences could not have come about in a short period of time. It was therefore of great interest, when in the middle of the 19th century, paleontologists discovered ancestral forms of the horse in rock formations of geologic antiquity. Little by little, during the last century, gaps in the "family tree" have been filled as additional discoveries were made, until now the ancestral line of the horse forms one of the most complete pictures of development in geologic time of any of the animals. These discoveries show the modern horse to be the survivor of a very highly diversified group of mammals. The family tree broke into many branches. It is probably only chance that the modern horse survived rather than a member of one of the other branches.

The evolution of the horse family leads back into geologic ages so remote that time is measured by epochs and periods. In the course of this long history, rock formations accumulated and types of life existed often under conditions wholly different from those of today. With the exception of the latest epoch, these geologic divisions of time each lasted several million years. The earliest epoch in which fossil horses are found is called the Eocene (*eo*—dawn, *cene*—recent) — the "dawn of the recent," and the horse of that time is appropriately called *Eohippus*, or the "dawn horse."* The succeeding divisions of time — Oligocene, Miocene, Pliocene and Pleistocene — are given names of Greek derivation, and emphasize the fact that these stages approach more and more in their character of life that of the Recent — or the epoch in which we live.

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*Unfortunately under the rules of zoologic nomenclature, the European name for this animal, *Hyracotherium*, based on the resemblance of its teeth to those of the Hyrax, has priority and must be used in the scientific literature.

GEOLOGIC TIME SCALE

Era	Period	Epoch	Dominant Life	Age in Years at Beginning of Period
CENOZOIC	Quaternary	Recent	Man	20,000
		Pleistocene		1,000,000
	Tertiary	Pliocene Miocene Oligocene Eocene Paleocene	Mammals (1st record of horse)	70,000,000 ± 2*
MESOZOIC	Cretaceous		Reptiles	135,000,000 ± 5
	Jurassic			180,000,000 ± 5
	Triassic			225,000,000 ± 5
PALEOZOIC	Permian		Amphibians	270,000,000 ± 5
	Carboniferous			350,000,000 ± 10
	Devonian		Fishes	400,000,000 ± 10
	Silurian			440,000,000 ± 10
	Ordovician		Marine Invertebrates	500,000,000 ± 15
	Cambrian			600,000,000 ± 20
PRECAMBRIAN			Primitive life	?4,500,000,000

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* ±2 indicates the total time may vary as much as two million years from the 70,000,000 indicated.

ANCESTRY

Remains of the earliest known ancestors of the horse occur in Eocene deposits of England and America, dating back from 40 to 60 million years in age. Still more ancient forms are as yet not known and are shrouded in the veil of the past. From an evolutionist's point of view the fact that the basic type of mammalian foot has five toes, whereas the Eocene horses already show a reduction of this number to four toes in the front foot and three in the hind, strongly suggests that more primitive types are yet to be discovered.

The American *Hyracotherium*, known from Wyoming, New Mexico and Utah, was the size of a small dog, 12 inches high at the shoulders, or in descriptive terms of modern horses, 3 hands in height at the withers. The neck, head, and feet were all relatively shorter than in the modern horse, and the back was arched. In fact there is little to suggest to the casual observer that *Hyracotherium* was a horse. The teeth were short-crowned with rounded cusps. The wearing surface possessed nothing like the intricate pattern of the cheek teeth in modern *Equus*, though exhibiting the fundamental structure seen in the primitive odd-toed hoofed mammals. Some spacing of the teeth between the incisors and the second premolars had occurred. In the feet of *Hyracotherium* each toe present was tipped with a tiny hoof.

Judging from the assemblage of animals that lived at the time of *Hyracotherium* and also from the nature of the deposits in which these fossils are found, the little fellows were forest dwellers, frequenting, perhaps, the banks of streams and lakes where they fed upon tender-leafed shrubs.

Good specimens of Eocene horses are rare, and even casts of the few well-preserved skulls and feet are valued objects for museum study and exhibit. The Los Angeles County Museum is fortunate in possessing a complete mounted skeleton from the Big Horn Basin, Wyoming.

Gradual changes within the Eocene group of horses occurred with the passing of this epoch and at least two other types, each slightly more equine than its forerunner, have been recognized. By Oligocene time — 40,000,000 years ago — the fourth toe of the front foot had disappeared, and in both front and hind feet the middle toe had become distinctly larger than the two outer ones. In the skull, the facial portion had become slightly longer than the cranium.

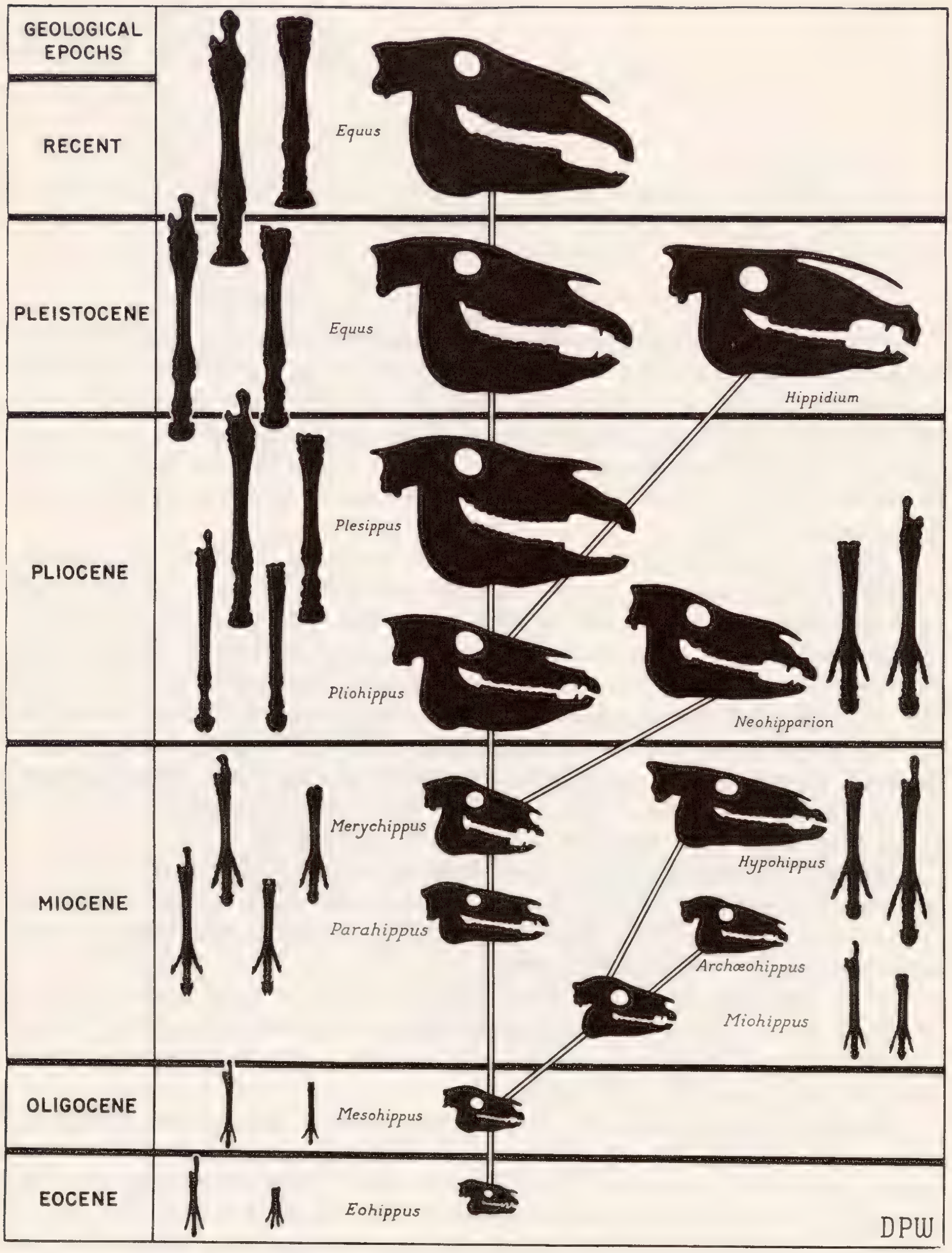

Fig. 3. DIAGRAM SHOWING SOME OF THE PRINCIPAL CHANGES IN SKULL AND FEET OF THE HORSE IN ITS EVOLUTIONARY HISTORY THROUGH GEOLOGIC TIME.

Drawing by David P. Willoughby

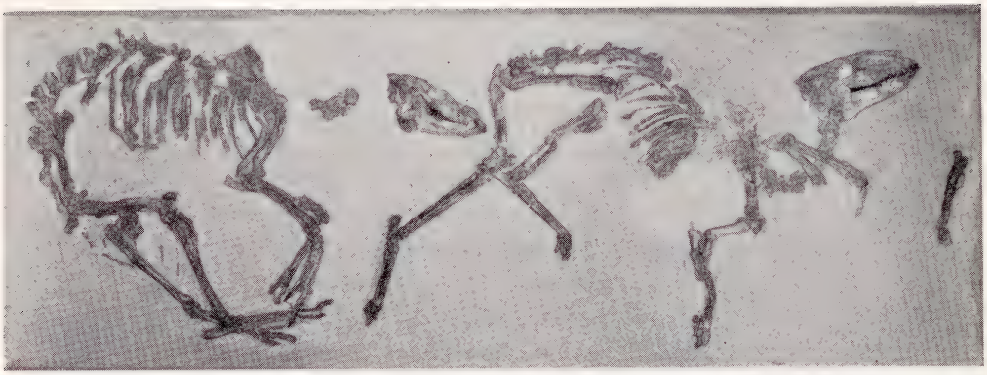

Fig. 4. Skeletons of 3-toed Horse, Mesohippus.
Slab from White River Beds, Nebraska. Oligocene epoch.

Mesohippus (fig. 4) of the early Oligocene averaged about 18 inches high, while *Miohippus*, which occurred somewhat later in the epoch, averaged 6 inches taller. Both were still largely browsing animals, as their short, fairly simple teeth would testify. The enamel pattern, however, already showed a trend toward the ridging characteristic of the later types.

Oligocene horses are known only from America where specimens are found more abundantly and often better preserved than are those of the earlier, Eocene, forms. The slab from the White River beds of Nebraska (fig. 4), shows two complete skeletons of *Mesohippus* in position in the rock exactly as they lay, after death some 40,000,000 years ago.

The Miocene epoch represents a transitional stage in the evolutionary history of the horse. Forested areas were frequented by horses, such as *Parahippus* and *Hypohippus*, of increasingly large size but with small outer toes spreading to reach the ground. On the bordering prairie lands a more advanced type was developing, represented by *Merychippus*. *Merychippus* was a transitional form in the horse lineage, of exceptional interest to the paleontologist. In this equine, no larger than a pony, the milk teeth, like the permanent teeth of its ancestors, were short-crowned and lacked, as a rule, all trace of cement between the enamel ridges. The adult teeth, on the other hand, were more like those of the horses today, the crowns being lengthened and possessing cement. Thus the adult *Merychippus* was equipped to feed upon harsher vegetation than the succulent herbage to which its ancestors were accustomed. This development of lengthened tooth crowns with addition of cement around the folds of enamel — begun in *Merychippus* approximately 20,000,000 years ago — has undergone continued improvement throughout the ensuing millenia, culminating in the broad, solid columns of the present day equines.

The middle toe in all Miocene horses was greatly enlarged, and in the prairie-dwelling forms the outer toes no longer touched the ground. With increased elevation of the foot, and accompanying lengthening of the legs, came a compensating extension of the facial part of the skull, enabling the animal to reach the ground to feed. By this time the gap between the cropping front teeth and the grinders was clearly evident.

By Pliocene time the skull and feet of the horses in the progressive line of ascent possessed essentially the proportions seen in modern *Equus*. In all horses of this epoch the outer toes were no longer functional, and by middle Pliocene time the first one-toed forms occurred. To all appearances the equines of 4 to 5 million years ago were true horses, differing from typical *Equus* of the Pleistocene and Recent only in minor details of structure. These forms are typically American. In contrast, the persistently three-toed hipparions of the American Pliocene spread into Eurasia, reaching the Old World at the beginning of this epoch by way of a land bridge between northwestern North America and northeastern Asia. Their extinction was world wide toward the close of the Pliocene.

Throughout the geologic span of development of the family Equidæ, a number of side branches have come and gone. Essentially, however, the stem from *Hyracotherium—Mesohippus—Miohippus—Parahippus—Merychippus* to *Pliohippus** is the most direct line of ascent to *Equus* of today (see fig. 3). Though scattered types of fossil horses have appeared in Europe, it is now generally agreed that the principal evolution of the horse occurred in America.

Equus, the typical horse of the Pleistocene, made its first appearance at the beginning of the epoch and was represented by numerous species throughout North America, and in lesser numbers in the southern continent. In South America two peculiar long-headed forms, *Hippidium* and *Onohippidium*, also occurred in the Pleistocene.

American horses continued to flourish through the Pleistocene, apparently disappearing on this continent in the early stages of the Recent, perhaps 10,000—11,000 years ago according to Carbon—14 dating of associated wood fragments. The disappearance of horses in North America before the coming of the Spanish Conquistadores is not completely understood.

At the beginning of the Ice Age, about 1,000,000 years ago, some of the species of North American horses followed migratory routes into the Old World, by way of what is now the Bering Strait. Since the distinctive races or species of horses of the Recent epoch are all Old World in origin, it is the Eurasiatic stock to which interest turns now in carrying the history of the horse up to modern times.

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*Various views are entertained by students of fossil horses with regard to the direct origin of *Equus*. Opinions on this subject are not all in agreement, and some advocate two distinct lines of ascent from *Pliohippus* to modern horses, namely through *Astrohippus* and *Plesippus*. However, for the purpose of the present paper it seems desirable to use a more simplified form of classification.

The several fossil species of horses known from the Old World doubtless represent more than one migration from America. Earliest records from India, Persia, southern and central Europe and the British Isles, indicate at least two and probably as many as four or five species, while some ten or more have been described from later Pleistocene deposits.

The differences between individual species are slight compared with the changes previously undergone by the group. Even the various living relatives of the horse, clearly distinct externally, are not easily separated by skeletal differences. The striped forms — zebra, and related quagga and bontequagga — show but little difference in tooth and skull characters from the light-built true horses, though, like the asses, they have rather narrower hoofs. The skull of the ass is shorter in the facial portion and more flaring across the orbits. The so-called "half-asses" of Asia, the onager and kiang, are oddly proportioned with high slender legs, fairly broad hoofs and narrow, horse-like skull.

Two types of horses can be distinguished throughout the Pleistocene of Europe and are evident even in modern domestic breeds. These may be called the Light Horses and the Heavy Horses, and are recognized, as the names imply, by their size and proportions. In the Light Type the face is short, the snout narrow, and the body and legs are slender. In the Heavy Horses, on the other hand, the face is the prominent part of the skull and is long and narrow, while bones of body and legs are massive. In addition to these size differences, certain distinctions in enamel pattern of the teeth are evident.

The course of migration of these two types, as outlined on the map (fig. 5), though somewhat hypothetical, is based upon known fossil and archeological records.

Both types occur in fossil deposits of western Europe. They appear in the rubbish piles of the early Cro-Magnon people of 25,000 years ago in France, and are pictured in the later carvings and cave drawings of both France and Spain. In spite of this association with man, however, there is no indication that the horse was, at this early time, anything but a game animal used as food.

The Heavy Type is most often encountered in the forested areas of central Europe, while the Light Type appears to have gone into the British Isles and thence to the Shetland Islands, as well as north into Scandinavia, at a time during the Ice Age when land connections were present. The Shetland and Irish ponies and the Norwegian Dun give evidence of derivation from this branch. Wild horses of similar type have been known within historic time in the steppe region of western Russia. Some authorities have included these west Russian horses, which became extinct only a century ago, with the living Przewalski's Horse of Mongolia, under the name of Tarpans. Antonius, however, has pointed out the differences in the short-headed, lighter Russian Tarpan type, now extinct in the wild, and the heavy-headed Mongolian wild horse. This latter form is indicated in the chart (fig. 9) as a remnant of the Heavy Horse stem, although the possibility remains that it belongs to a distinct group, differing from both the Heavy and the Light Types.

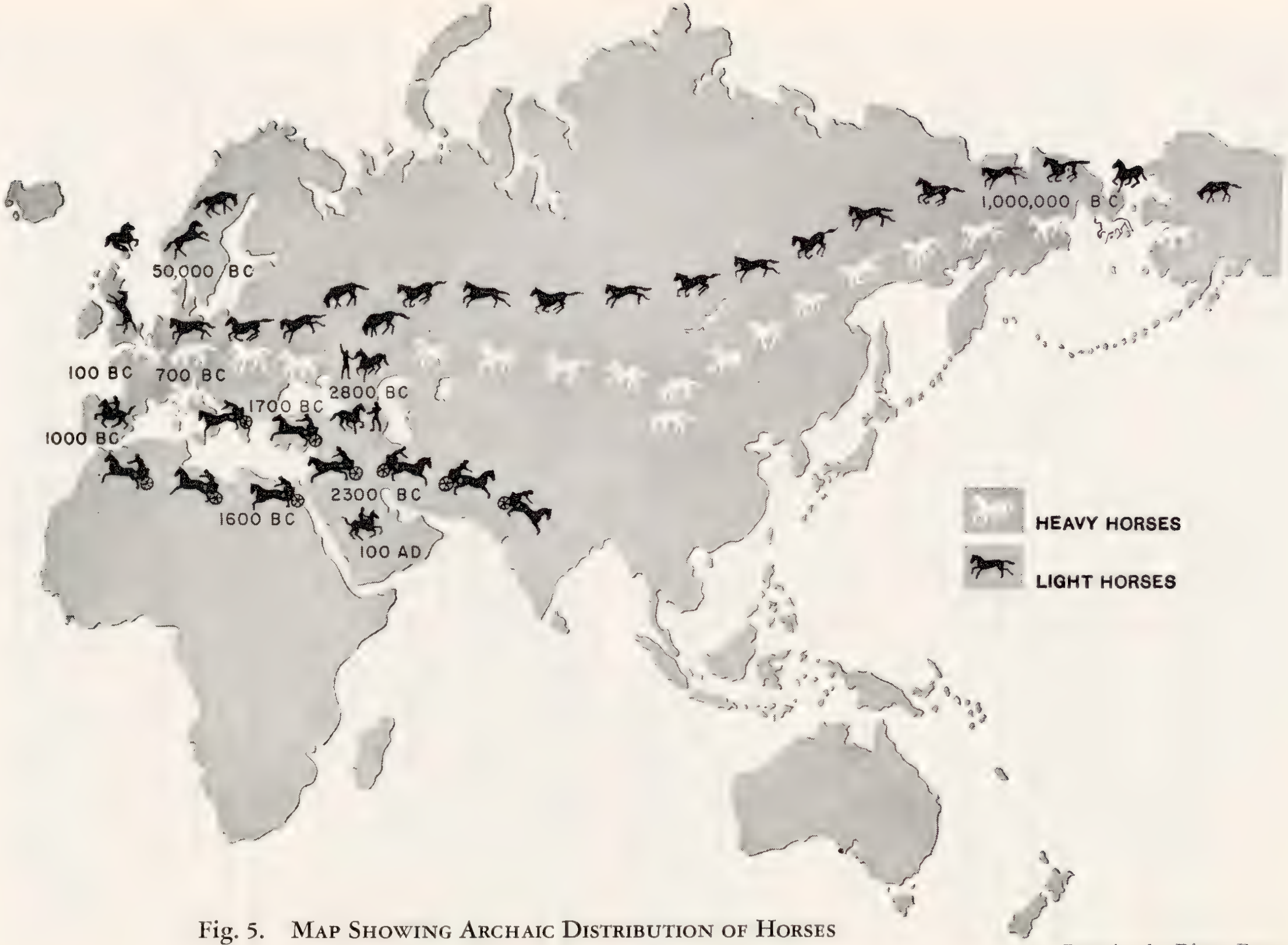


Fig. 5. Map Showing Archaic Distribution of Horses

Drawing by Diana Bovee

HISTORY

Although the asses of Africa and the onager of Asia Minor were used as beasts of burden, or with chariot, more than three thousand years before Christ, the first unquestioned evidence of domestication of the true horse is found in Mesopotamian records of about 2200 B.C. It first appeared as a small, Light Type, seemingly used only with the chariot.

There is a growing acquiescence in the theory that the Indo-Europeans, the so-called Aryans, coming down from the country north of the Black Sea and Caspian Sea, were the first horsemen. The pre-Aryan peoples of Africa, Asia Minor and India were presumably unacquainted with the horse except above the Iranian Plateau. Here, at Anau in Turkestan, a type similar to Przewalski's Horse was apparently indigenous at that early time and was used as food by the people of the region, though there is no evidence of its domestication. Men of similar early culture elsewhere, however, have left no records of a knowledge of the horse. It was evidently, therefore, a different people — presumably the nomadic Indo-Europeans — and a different horse which later entered the fertile lands below the Caucasus. Breasted postulates an invasion, possible through the Caucasus, in 2500 B.C. and another a few centuries later by way of the Iranian plateau.

This theory not only accords with ancient archeological records, but it is further borne out by the fact that the early illustrations of chariot horses of Asia Minor and Egypt indicate slender, spirited horses not unlike the smallest of the Arabian horses living today. The latter in turn bear a marked osteological resemblance to the now extinct horses of the steppes of western Russia. The skulls of these creatures are also like skulls from ancient peat beds of Sweden — all of the Light Horse Type.

Shortly after its appearance in Mesopotamia, the horse became known in Greece (1700 B.C.), Egypt (1600 B.C.), and India (1500 B.C.). Spreading across northern Africa through the Barbary States, where the Barb breed had its origin, it eventually reached Spain about 1000 B.C. in the possession of the Moors.

As the importance of horses in war was recognized, larger and faster animals were developed by breeding, until by 750 B.C. they were large enough to be ridden,

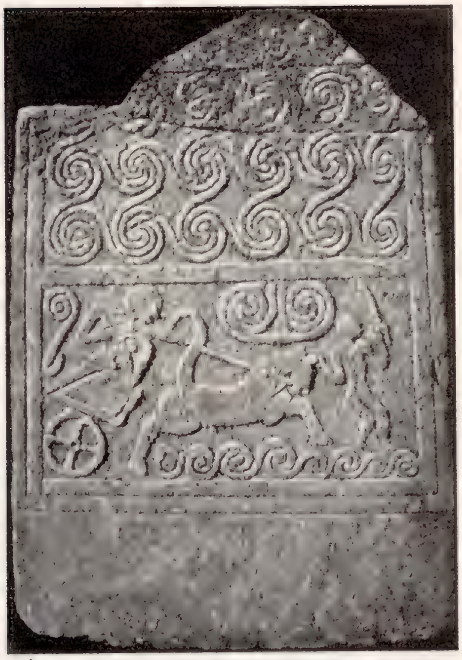


Fig. 6. SMALL CHARIOT HORSE. MYCENEAN GRAVESTONE, 1700 B.C.

Athens National Museum

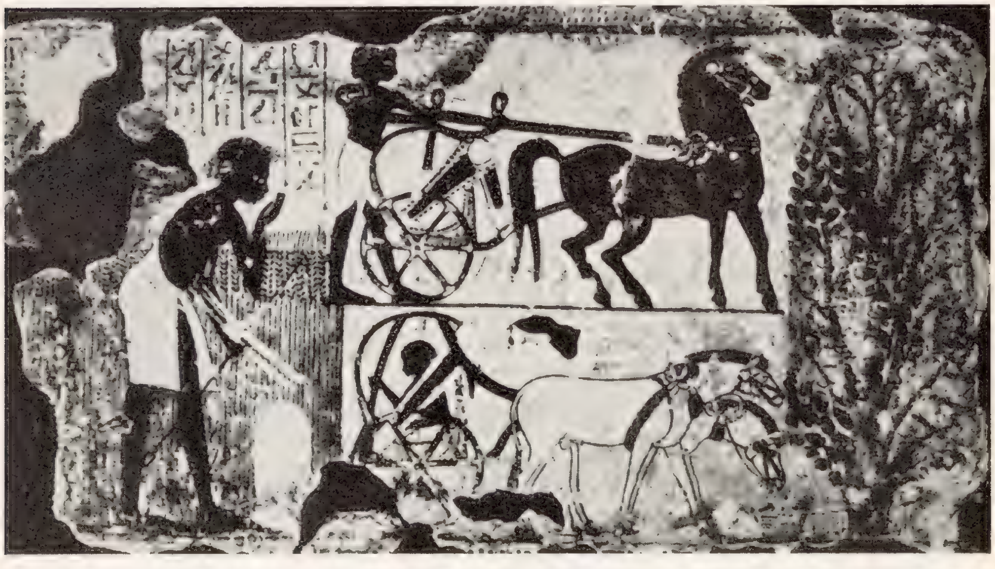


Fig. 7. MURAL PAINTING FROM A TOMB AT THEBES, EGYPT, 1400 B.C.
ABOVE, SMALL CHARIOT HORSE; BELOW, ONAGERS USED AS DRAFT ANIMALS.

British Museum

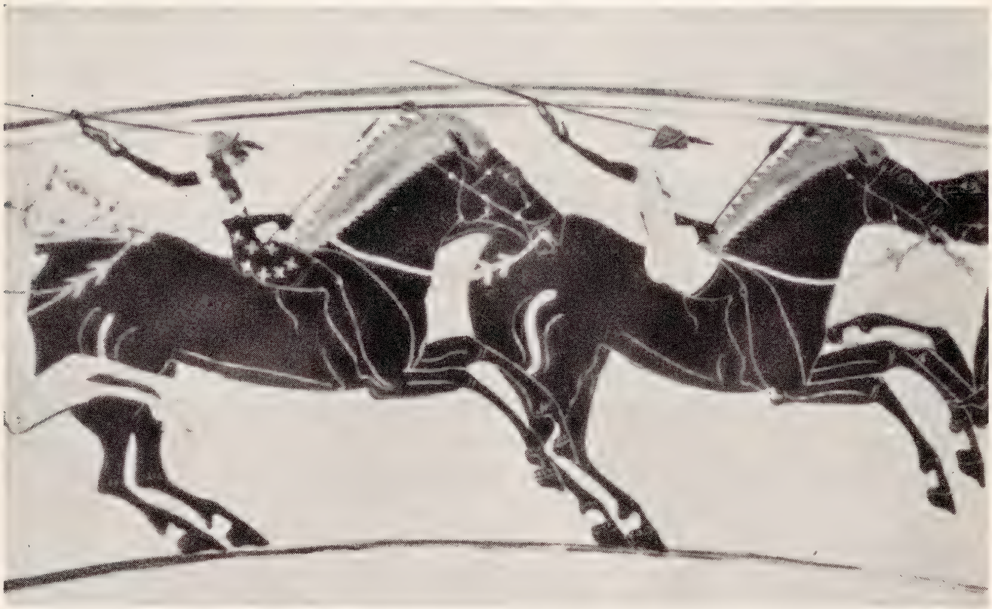


Fig. 8. Javelin Throwing from Horse-back. Vase Painting 6th Century B.C.
Athens, Acropolis Museum

and cavalry constituted a significant part of the Mesopotamian army. Armenia and Media became, at this time, important breeding centers from which came the famous Nisean horses, forerunners of the present-day Turk. It is a strange fact that in spite of their proximity to Arabia, horses apparently were not used in that country until several hundred years later, and it was 600 B.C. before the Arabian could be called a definite breed.

In 648 B.C. horses were first introduced into sports with the entrance of riders in the Olympic Games, and by the 6th century B.C. horse-racing had become a popular sport. Horses appeared abundantly in Greek art and mythology of the late pre-Christian period and were popular figures for coins, vase paintings and sculpture (see fig. 8).

Up to this time the few breeds of horses all came from the Light Horse stem. Bronze age burials of old Austria, dated at about 700 B.C., yield the first record of domestication of the Heavy Horse Type. These sturdy "cold-bloods" — so-called in contrast to the high-spirited "hot-blooded" southern breeds — when later discovered, by northward moving Mediterranean peoples, were crossed with the smaller, swifter oriental forms to produce stronger riding horses. The war horses of Caesar's time appear to have been products of such a cross. The finer breeds of old Spain contained the blood of the light-built horse of Barbary, Africa (and later the Arabian as well) combined with old Gothic Heavy Horses, while the Austrian horse, the Lippizan of the Spanish Riding School in Vienna, represents the type in more recent time.

In reverse manner, occasional introduction of Light Horse blood into the heavier animals served to produce greater activity in the more slow-moving "cold-bloods". Such a high-spirited, large breed is the Percheron, said to have been developed about 732 A.D. when the Franks of the province of Perche overcame the invading Saracens of Arabia and introduced the blood of the captured oriental steeds into the native Flemish horses.

As early breeding was carried on for the practical purpose of obtaining forms adapted to particular uses, any amount of cross-mating may have taken place, and it is likely that very few breeds can be traced back to a completely pure line of Heavy or Light Horse Type. Those horses shown on the chart of the Heavy Horse Type (fig. 9) are, however, predominantly of "cold-blood" stock, while those represented on the chart of the Light Horse Type (fig. 12) derive largely from the stem of more slender animals.

The "cold-bloods," clearly portrayed by the artist Dürer of the 15th century A.D. (fig. 10) were the continental war horses of the Middle Ages. As the use of heavy armor later diminished and riding equipment became lighter, the importance of the "Great Horse" in cavalry lessened and it gradually came to be used as a draft horse employed in farming, coaching and draying, where power rather than speed was important. The breeds which followed are the result of the environment at each particular locality combined with selective breeding depending upon the needs of the people. Of all the "cold-bloods," the Belgian comes nearest to being a natural breed. Selective breeding was not begun until 1850, and before that time whatever differences existed between the native Belgian horse and the old Flemish type were purely a matter of natural environmental conditions.

Of the French draft breeds, the Ardennais is probably the nearest descendant of the old Flemish type. The Percheron, as before stated, has long borne the blood of the high-spirited oriental horses and is even now occasionally bred with Arabian stock.

Heavy horses reached the British Isles before the Christian Era, with the Gallic invaders, and again a few centuries later in the time of Caesar. Presumably, however, the war horses of the Norman conquerors of 1066 A.D. contributed most to the British "cold-bloods" as they are known today.

The Shire, Suffolk and Clydesdale have been local British breeds for five hundred years. The oldest of these, the Shire, is also the heaviest, surpassing even the Belgian in size. The Clydesdale originated in Scotland by a cross of old type Suffolk with native Scottish mares. It is well adapted to the rugged terrain of its homeland, having better feet and stronger legs than any of the other draft horses.

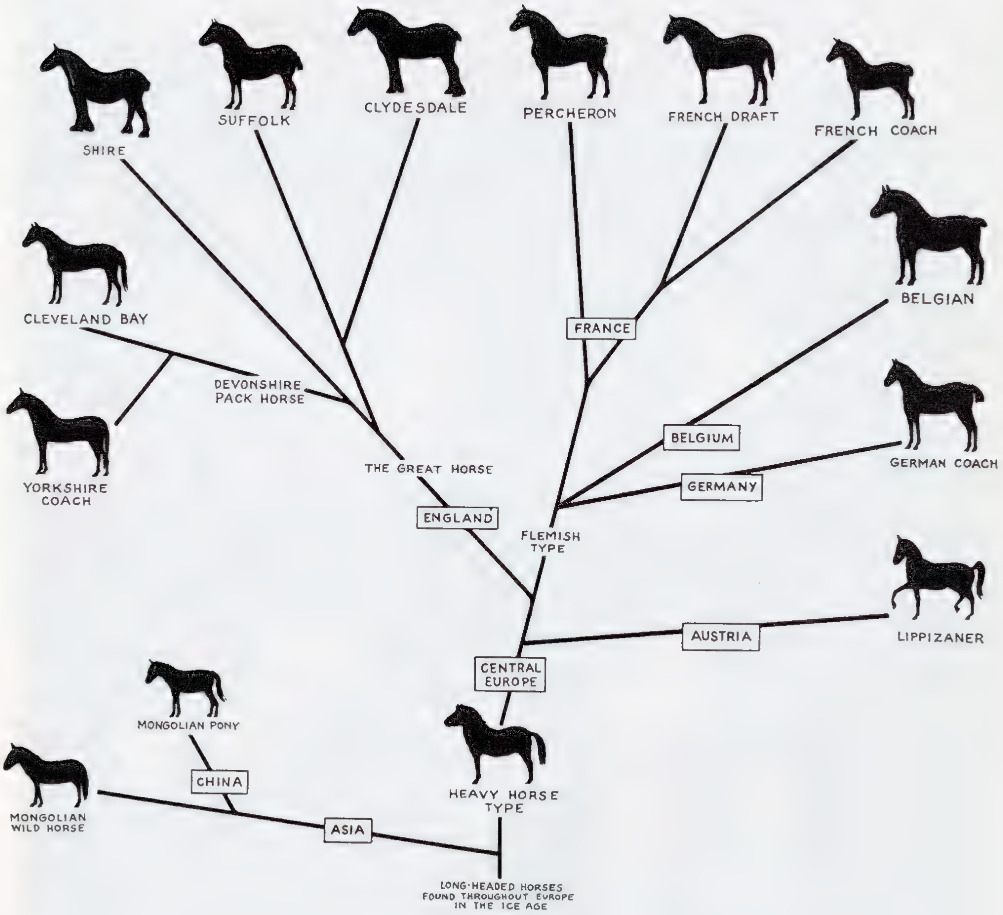


Fig. 9. CHART SHOWING DEVELOPMENT OF BREEDS OF HORSES DERIVED FROM THE HEAVY HORSE TYPE

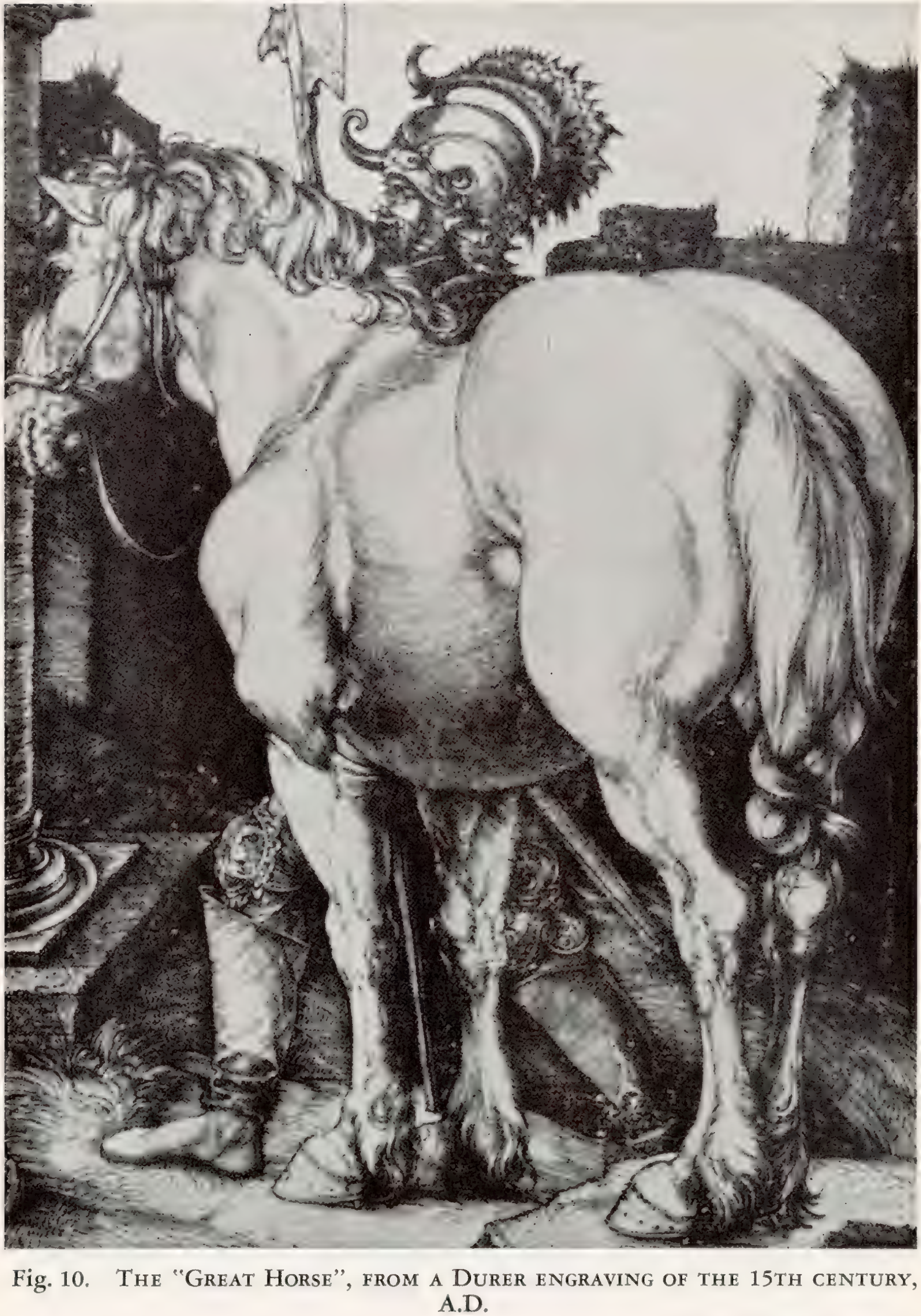


Fig. 10. THE "GREAT HORSE", FROM A DURER ENGRAVING OF THE 15TH CENTURY, A.D.

Courtesy Knoedler Galleries

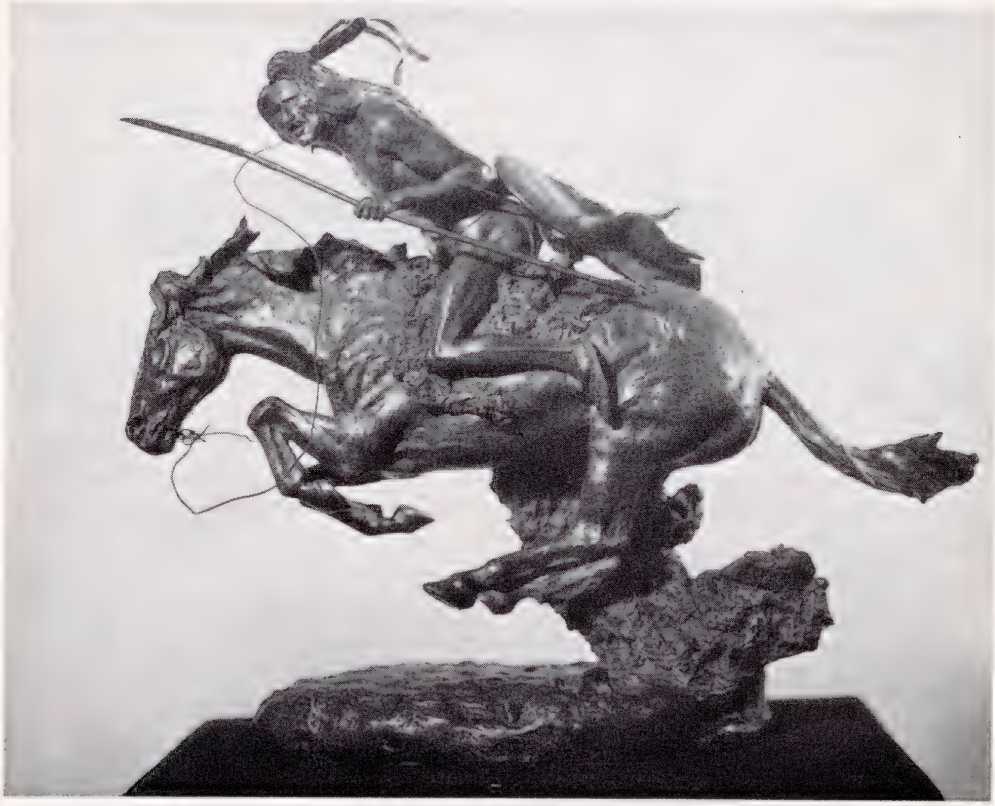


Fig. 11. INDIAN PONY. BRONZE BY FREDERICK REMINGTON.
Collection L. A. County Museum

The first coach horses, used in pulling heavy stages over rough roads, were larger than the breeds as known today. With the bettering of roads in the 17th century, lighter equipages were made possible and it became fashionable to breed lighter, more high-stepping horses for coach work. All of the later coach horses, therefore, represent crosses with breeds of Light Horse Type. The German Coach Horse is the least altered, but both it and the French breed now bear Thoroughbred blood. The Cleveland Bay originated in England early in the 18th century by a cross between the Barb and the Pack Horse of Devonshire, while later Thoroughbred crosses on the Bays have produced the Yorkshire Coach Horse.

The Austrian horse of the Imperial Court, the Lipizzaner, is a beautiful animal, nearly always gray, which has been derived from a cross between the Kladruber and a small, mountain horse of northern Italy, with a later infusion of Arab blood. The Kladruber — a breed which it would appear is now extinct — was a large horse of semi-draft build which was developed in the 15th to 17th centuries in northern Italy by crossing Spanish and Eastern stallions with the heavy native horse of the Alps. The Kladruber, like the Lipizzaner, was almost always of a light gray — often nearly white — coloration.

The first horses to return to America — in the 15th century — were predominantly of Light Horse Type. Early Spanish explorers and colonists of the New World brought with them the horses then common in Spain, the finely bred descendants of the Barbs imported from north Africa, some presumably of the small type known as the Spanish Gineta, others of larger build probably of mixed-blood. To these Spanish introductions we trace the South American Baguales and Criollos, and the well-known "wild" horse of North America, the Mustang — all descended from animals which escaped, or were stolen by the Indians from the early colonies of Spanish-America. Much of the South American "wild" stock seems to have come through horses stolen by the Chilean Indians and others and taken to the Argentine pampas in the 1550's. The plains horses of North America first appeared some fifty years later, and authorities now believe these may be directly traced to the stock of the early ranchos and missions of the region of Santa Fé, New Mexico, rather than to any possible strays from earlier expeditions of De Soto or Coronado.

Rangy and somewhat dwarfed as the result of living wild in the arid country of the southwest, there is little in the Mustang to suggest its fine Spanish ancestry. From this feral stock came the Indian Ponies (fig. 11), Cow Ponies and Broncos. The Cow Pony remains in use today on the ranches of the west, but has been widely mixed with various other types and has never become a true breed. The Palomino, however, which was first noted as a color phase among Cow Ponies, is now being established as a definite breed.

Although modern breeds of Light Type Horses are largely influenced by the Mesopotamian, African and Arabian breeds, a remnant of the Ice Age Light Horses in the British Isles played an important part as well. These so-called Celtic Ponies

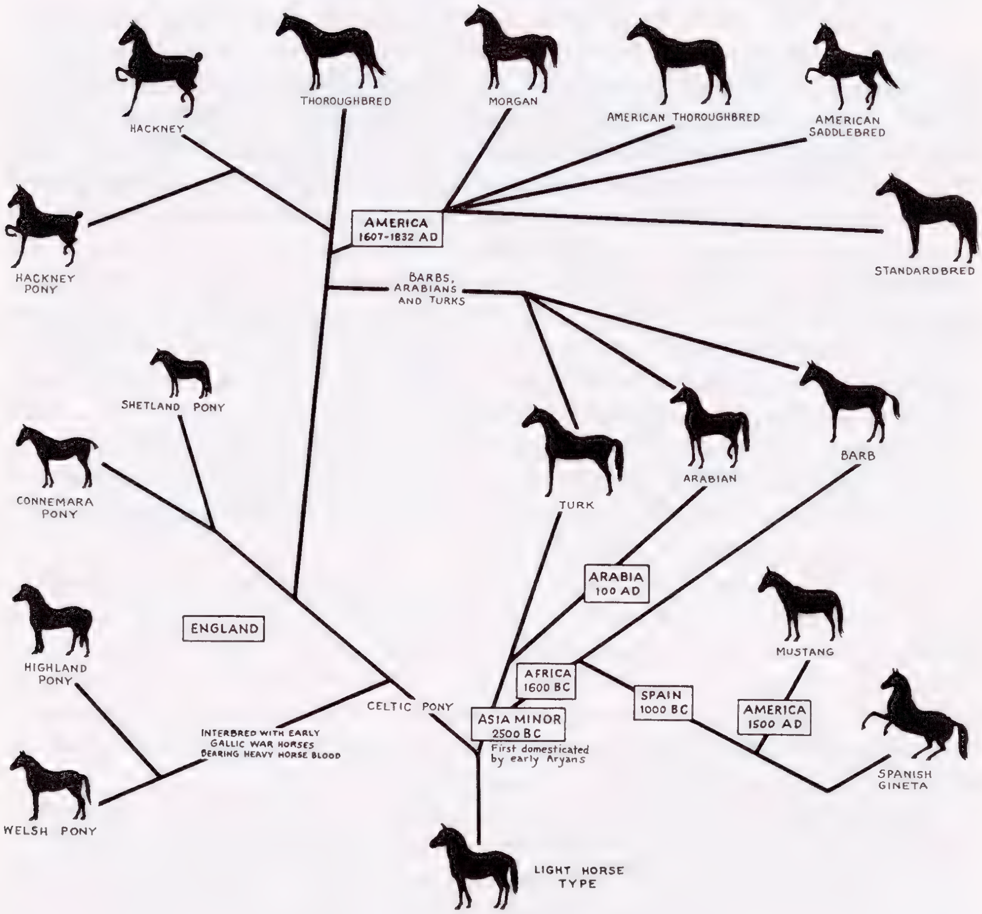


Fig. 12. CHART SHOWING DEVELOPMENT OF BREEDS OF HORSES DERIVED FROM THE LIGHT HORSE TYPE

were ancestral to the ponies of the Shetland Islands and of Ireland (the Connemara), and, interbred with some of the war horses of the invading Gauls of the 2nd century B.C., gave rise to the heavier Welsh and Scottish (Highland) ponies. Though small, the British forms were used abundantly as cart and pack animals and the Highlands were used as foundation stock for military horses as well.

It was with this native British stock that the Turks, Barbs and Arabians, brought back by the returning Crusaders, were bred, forming the basis for the later English Thoroughbred. Subsequent introductions of oriental and African horses strengthened the stock and by the early 18th century, with the importation of the three famous sires, "Godolphin Barb" (1689), "Darley Arabian" (1706), and "Byerly Turk" (1724), the English Thoroughbred was an established breed. From Thoroughbred stock have come all of the chief English and American sporting horses. Long breeding records are available for most of these.

The Hackney, formerly called the Norfolk Trotter, was originally an English horse of mixed blood. In 1715, the line was crossed with English Thoroughbred through "Flying Childers," son of "Darley Arabian." Subsequent crosses with Thoroughbred sires produced "Old Shales" (1755) and "Driver" (1765) which were the first to show the high trot characteristic of the breed today.

Importations of English Thoroughbreds to America began as early as 1730. Allowing for slight differences due to environment, the American Thoroughbred of today is no different than the English Thoroughbred, and like the English horse is used for racing, hunting, jumping and polo.

Certain other breeds, however, grew out of the 18th and 19th century American imports. The fastest of the trotters, the Standardbred, bred for harness racing in America in the early 19th century, stems directly back to the English Thoroughbred, "Messenger," a descendant of "Darley Arabian." The Morgan, a compact horse of heavier build than the other trotters, is thought to have originated in a cross between a Dutch horse of Heavy Type and an English Thoroughbred. The famous sire of the Morgan stock is the American-born "Justin Morgan" (c.1790).

The American Saddlebred was developed about a hundred years ago, by southern plantation owners, for business and pleasure riding on the farms. Distinctly an American type, the Saddlebred is particularly noted for its easy gait, and today is largely used in the show ring as a 5-gaited horse. A popular recent development of the Saddlebred is the Tennessee Walking Horse. Though the main line of the Saddlebred stems through "Denmark" to "Hedgford" (a Thoroughbred imported from England) back to "Byerly Turk" (1724), another branch from Standardbred "Mambrino" also contributed to the breed.

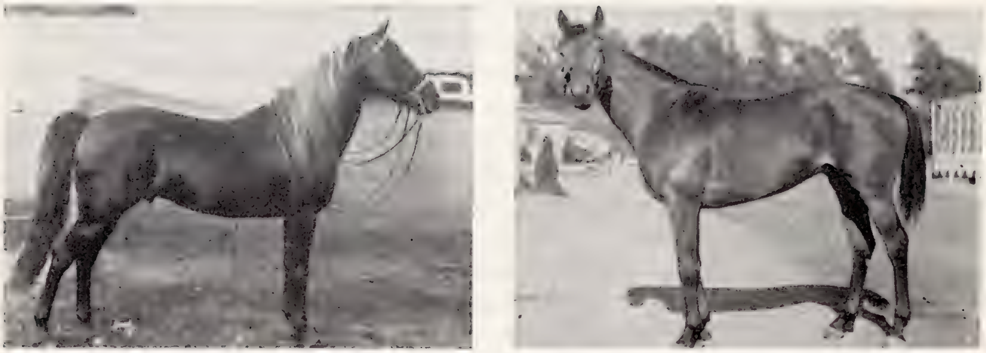
In addition to these typical American breeds, there are today sixteen European horses in use in this country, five of Light Type (including the Shetland and Welsh ponies) and eleven Heavy.

There is no true American draft breed, though for about a hundred years, from

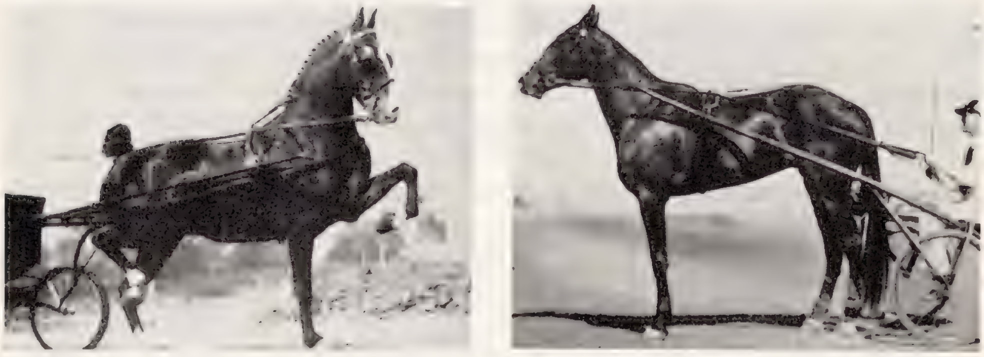
1750 to 1850, the Conestoga of northeastern Pennsylvania was a popular horse for freighting and farm work. The breed did not develop further, however, and is now unknown. Farm horses today may be any of the finely bred draft horses, but more frequently, especially on the smaller farms, are "just horse" — a mixed-blood of unknown antecedents. Such, also, were the "milk horses" of a few years past and many of the animals used for horse-cars, fire-engines and stage-coaches.

The horses used in the army are drawn from many breeds and their selection depends upon definite specifications as to size, proportions and body form. The so-called Polo Ponies, as well as the horses used for hunting and jumping, are also types chosen for their fitness for the tasks, rather than a particular breed, though Thoroughbreds are most often used. The typical "race horse," of the running race, is always of Thoroughbred stock, while for harness racing, which is again coming into popularity, the Standardbred is the horse used.

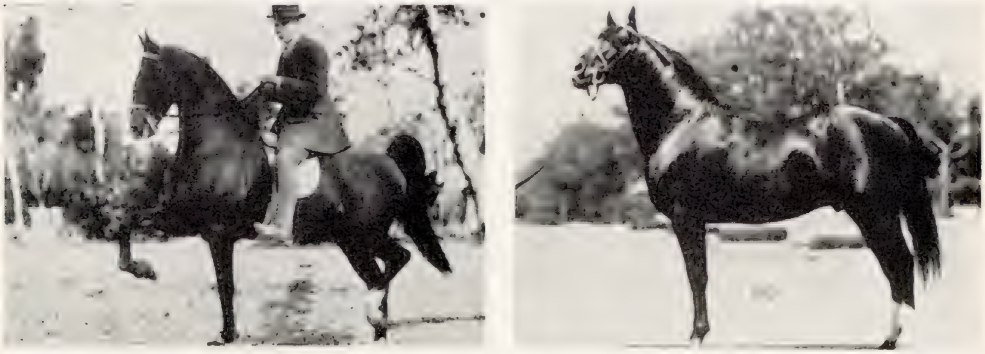
At present Thoroughbred breeding is becoming a large industry in the United States particularly in Kentucky and in California. Southern Californians are familiar, also, with the W. K. Kellogg Arabian horse farm maintained by the University of California, where breeding of Arabians is carried on. Both Thoroughbreds and Arabians are important horses for crossing and improvement of other breeds, for even today, having established some sixty breeds throughout the world, man still continues to experiment with further crossing and selection as the fashion in horses changes from decade to decade.



ARABIAN THOROUGHBRED



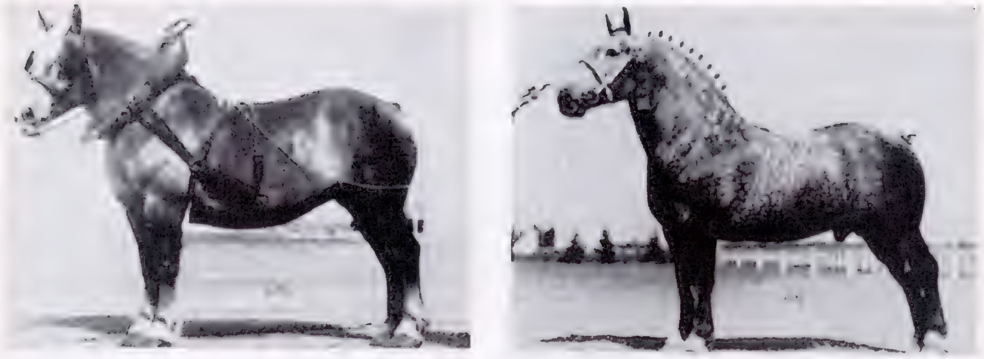
HACKNEY STANDARDBRED



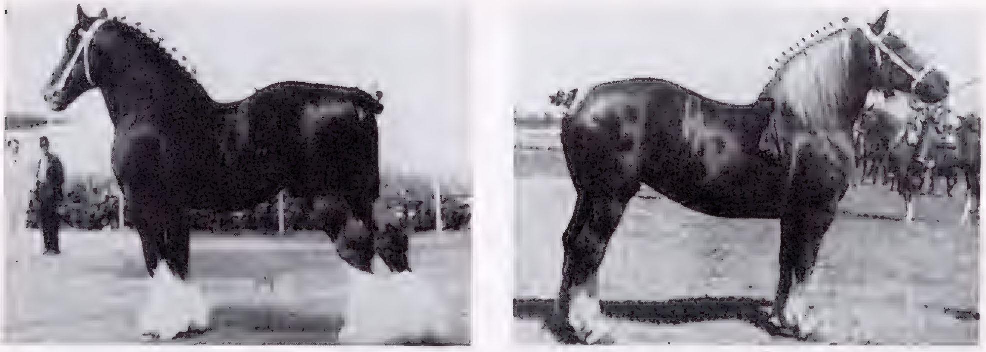
SADDLEBRED MORGAN

Fig. 13. Modern Breeds of Horses of Light Type

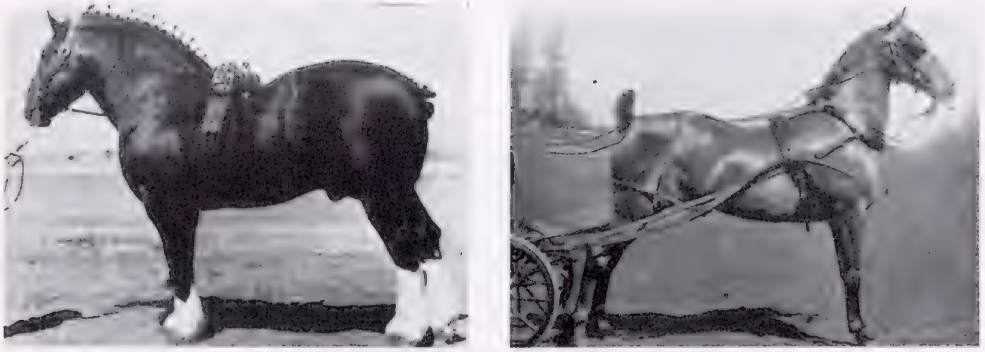
Photos courtesy of B. A. Bone, except Thoroughbred by Carroll



BELGIAN PERCHERON



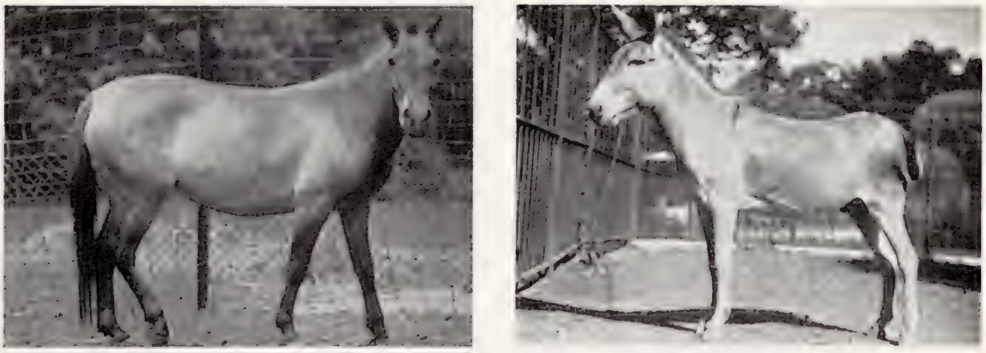
CLYDESDALE SUFFOLK



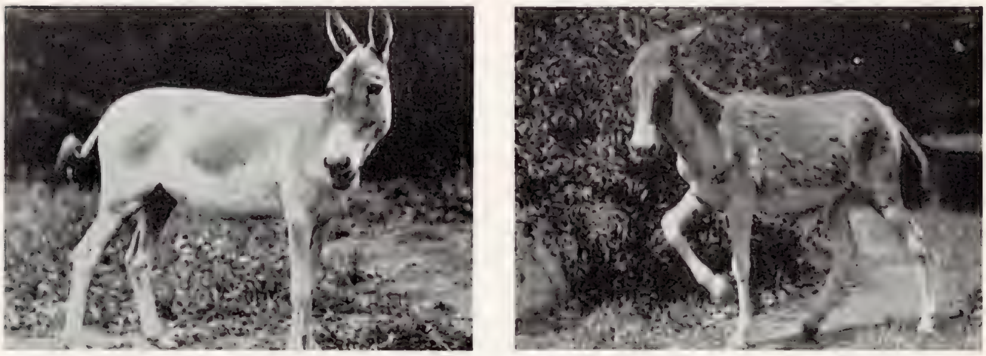
SHIRE FRENCH COACH

Fig. 14. Modern Breeds of Horses of Heavy Type

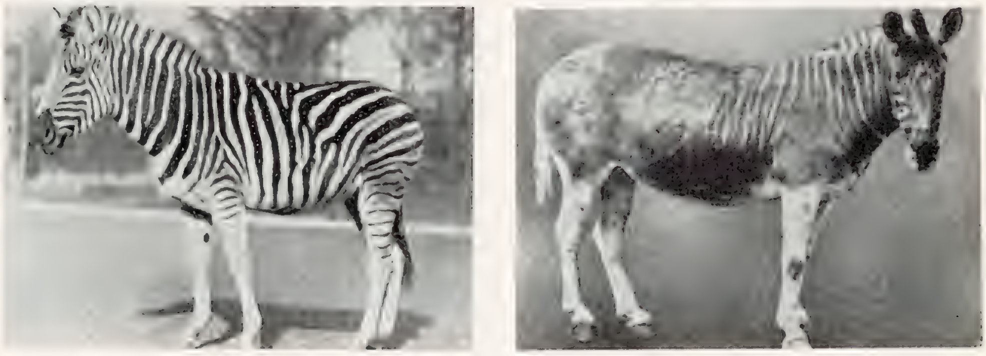
Photos courtesy of B. A. Bone



PRZEWALSKI'S HORSE, MONGOLIA ABYSSINIAN ASS, AFRICA



ONAGER, ASIA KIANG, ASIA



ZEBRA, AFRICA QUAGGA, AFRICA

Fig. 15. THE WILD HORSE AND ITS RELATIVES

Photos by New York Zoological Society, except Quagga after Lydekker.

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